AIRCO

Material Safety Data Sheet **ACETYLENE**	Page: 1 Rev. Date 05/09/89

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SECTION #1 - IDENTIFICATION

Product: ACETYLENE

CAS Number: 74-86-2
Product Code: MSDS CODE G-2
Chemical Family: Alkyne
Chemical Formula: C2H2

Synonyms: ETHENE
G-2

NFPA Hazard Rating - Health: 1 Slight
- Fire: 4 Extreme
- Reactivity: 3 High

SECTION #2 - CHEMICAL COMPONENTS

Component: ACETYLENE
CAS Number: 74-86-2 Percent of Mixture: 100.0000
ACGIH TLV-TWA: D, simple asphyxiant

SECTION #3 - PHYSICAL DATA

Boiling Point: -118.8°F -83.8°C
Melting Point: - 113°F -80.6°C
Vapor Pressure: 645 psia
Specific Gravity: 0.906
Solubility (H2O): Soluble

Appearance

A colorless gas.

SECTION #3 - PHYSICAL DATA Continued...

Odor

Pure acetylene has an etheral odor. Commercial (carbide) acetylene has a distinctive garlic-like odor.

SECTION #4 - FIRE FIGHTING & EXPLOSION DATA

Flash Point: Gas
Autoignition: 565°F 296°C

Lower Explosive Limit (%): 2.2
Upper Explosive Limit (%): 80 - 85*

Fire and Explosion Hazards

*Pure acetylene can ignite by decomposition above 15 psi; therefore, the UEL is 100% if the ignition source is of sufficient intensity.

Electrical Classification: Class 1, Group A.

GASEOUS ACETYLENE IS SPONTANEOUSLY COMBUSTIBLE IN AIR AT PRESSURES ABOVE 15 PSI (207 kPa.). It requires a very low ignition energy so that fires which have been extinguished without stopping the flow of gas can easily reignite with possible explosive force. Acetylene has a density very similar to that of air so when leaking it does not readily dissipate.

Extinguishing Media

Carbon dioxide, dry chemical.

Special Fire Fighting Instructions

If possible, stop the flow of gas supply and allow fuel to consume itself. Use water spray to cool adjacent areas. Keep personnel away since heated or burning cylinders can rupture violently.

SECTION #5 - EXPOSURE and EFFECTS - INHALATION

Routes of Exposure - Inhalation

Acetylene is a simple asphyxiant. Oxygen levels should be maintained at greater than 18 molar percent at normal atmospheric pressure which is equivalent to a partial pressure of 135 mm Hg. High concentrations of acetylene so as to exclude an adequate supply of oxygen to the lungs causes dizziness, deeper breathing due to air hunger, possible nausea and eventual unconsciousness.

SECTION #5 - EXPOSURE and EFFECTS - INHALATION Continued...

Routes of Exposure - Inhalation

Acetylene is relatively inactive biologically and essentially nontoxic; therefore, the major hazard is the exclusion of an adequate supply of oxygen to the lungs. Low concentrations (10-20% in air) cause symptoms similar to that of being intoxicated. As a narcotic gas or intoxicant, it causes hypercapnia (an excessive amount of carbon dioxide in the blood). Repeated exposures to tolerable levels has not shown deleterious effects.

Exposure to the acetone component is unlikely unless cylinder is leaking on its side. Acetone is primarily a central nervous system toxin causing headache, nausea, dizziness, vomiting and fatigue.

First Aid - Inhalation

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive. Keep victim warm and quiet.

SECTION #5 - EXPOSURE and EFFECTS - SKIN

Routes of Exposure - Skin

Skin effects are not likely. Contact with liquid acetone may cause irritation and dermatitis upon repeated exposures.

First Aid - Skin

Wash affected areas with soap and warm water. If irritation persists, seek medical attention.

SECTION #5 - MISCELLANEOUS TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP: No IARC: No OSHA: No

SECTION #6 - REACTIVITY & POLYMERIZATION

Stability: Unstable

Conditions to Avoid (Stability)

Do not allow free gas (outside of cylinder) to exceed 15 psi. Do not expose cylinders to sudden shock or heat.

Incompatible Materials

Oxygen and other oxidizers including all halogens and halogen compounds. Forms explosive acetylide compounds with copper, mercury, silver, brasses containing >66% copper and brazing materials containing silver or copper.

Hazardous Decomposition Products

Carbon monoxide and hydrogen.

Hazardous Polymerization: Will not occur.

SECTION #7 - SPILL, LEAK, & DISPOSAL PROCEDURES

Steps to be Taken in The Event of Spills, Leaks, or Release

Evacuate all personnel from affected areas. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or call your closest Airco location.

Waste Disposal Methods

Do not attempt to dispose of waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Airco for proper disposal.

SARA Hazard Classes: **Acute Health Hazard**
Fire Hazard
Sudden Release of Pressure Hazard

SECTION #8 - SPECIAL PROTECTIVE MEASURES

Ventilation

Hood with forced ventilation. Local exhaust to prevent accumulation above the exposure limit. Mechanical in accordance with electrical codes.

Eye Protection

Safety goggles or glasses.

Skin Protection

PVC or rubber in laboratory; as required for cutting and welding.

Respiratory Protection

Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Other Protection

Safety shoes, safety shower.

SECTION #9 - SPECIAL PRECAUTIONS - STORAGE & HANDLING

Storage & Handling Conditions

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve protection outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when removing gas from the cylinder. DO NOT ALLOW THE FREE GAS TO EXCEED 15 PSI (207 kPa) @ 70°F (21.1°C). Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "NO SMOKING OR OPEN FLAMES" signs in the storage area or use area. There should be no sources of ignition in the storage or use area.

SECTION #10 - SHIPPING INFORMATION

Proper Shipping Name: Acetylene

SECTION #10 - SHIPPING INFORMATION Continued...

Hazard Class: Flammable Gas
DOT Identification Number: UN1001
DOT Shipping Label: Flammable Gas

SECTION #11 - MISC COMMENTS & REFERENCE DOCUMENTATION

Earth-ground and bond all lines and equipment associated with the acetylene system. Electrical equipment should be non sparking or explosion-proof.

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipments of a compressed gas cylinder, which has not been filled by the owner or with his (written) consent, is a violation of Federal Law (49CFR).

For additional recommendations, consult Compressed Gas Association Pamphlets P-1, G-1. NFPA #51-1984. OSHA 1910-subpart H & Q.

Since acetylene will explode or combust if its pressure exceeds 15 psi (207 kPa), it is shipped dissolved in acetone or dimethylformamide, which is dispersed in a porous mass within the cylinder. Follow AIRCO's instructions for the maximum withdrawal rate for each size cylinder so that the solvent is not withdrawn with the acetylene.

Most metals except silver, copper, mercury, or brasses with more than 66% copper are compatible (noncorrosive) with acetylene.

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